

Article

General health characteristics of religious Sisters and Brothers. Comparison between samples of non consecrated and consecrated persons

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1. Introduction

Persons who consecrated themselves through their lifelong commitment to God and to a certain religious institute represent a minority group belonging mostly to the Roman Catholic Church [1,2]. This group differs from the major society in more aspects and its way of life arouses many questions [3,4]. To the main specifics of living in a religious institute belong the fundamental role of spirituality [5] and religiosity [6], the hierarchical structured community and subordination to the authority, the binding statutes and daily routine [7,8], gender uniformity and resignation on sexual relationships and family life [9]. Expected is also a high level of social engagement [10] as well as a certain social isolation and/or self-excluding from the mainstream [11,12]. Catholic order members can be regarded as a homogenous population with a number of common characteristics on individual and socioeconomic level [13].

Research on health among consecrated people attracts some attention but the studies are sparse and rather ambiguous. The majority of the existing studies brings positive conclusions. The religious order members might be at lower risk of mental health disorders [14], more successful in achieving physical and mental well-being [15] and able to care systematically for their health [16]. The prevalence of positive emotions was observed among the nuns [17] as well as a higher level of personal happiness [18] and satisfaction at work engagement [19] together with lower tendency to professional burnout [20]. Several studies chose the religious communities as a sample of people living a meaningful and cognitive stimulating life and came to the results of lower risk of Alzheimer disease or dementia among them [21,22]. It corresponds to the findings about higher ability of consecrated persons to age meaningful [23] and about their longevity [24,25]. On the contrary, there are very few studies pointing at some deficits in health practises of religious order members [26], at the danger of exhausting the spiritual resources through excessive work engagement [10] or at the impact the community conflicts have on the health of individuals [13]. However, the existing results cannot be generalized. There is need of more data from different countries and social-political contexts. Most of the previous research

studies were carried out in the USA, some of them in Poland, Germany and Italy. In all these countries, in spite of the advanced secularisation in some of them, the presence and the social engagement of religious institutes have an established tradition and a high level of public credit, which seems to play some role [14]. On the contrary, data from secular post-communist countries are missing as well as data from African, Asian or South American communities. We presume, there are also some other bias to consider, such as a high level of social desirability and non-representative samples because the voluntary questionnaires are rarely completed by all members of the community. The healthier and more active persons are more likely to participate. The current study examines the general health characteristics of religious brothers and sisters in the Czech Republic in comparison to control samples of the Czech population and a sample of consecrated persons from the Slovak Republic. The Czech Republic as the country with the highest percentage (76,4%) of religiously unaffiliated people in the world (Pew Research Center 2014) represents a not very supportive milieu towards the Roman Catholic Church and religious institutes. Slovakia belongs traditionally to the Catholic countries (62% Roman Catholics and 13,4% atheists in the census 2011) and the consecrated persons are more numerous and more appreciated than in the Czech Republic. Nevertheless, the modern history of these two countries is firmly connected and the convents and monasteries in both of them are still carrying the consequences of the long persecution, overworking and forced isolation during the communist regime. Compared to the previous studies, in view of these facts, we suppose a higher level of negative health affecting factors and lower scores of well-being and life satisfaction among the members of the Czech, possibly Slovak religious communities. We also presume some slight differences between the Czechs and Slovaks.

Therefore, the aim of this study is to explore the possible relations between the membership in a convent or monastery religious community in a highly secular post-communist country and both the physical and mental health of the individuals.

2. Methods

2.1. Measures

2.1.1. Health complains

The frequency of recent health complains was assessed by the 12-item measure: headache, stomachache, backache, intestinal problems, feeling depressed, irritability/bad mood, nervousness, trouble falling asleep, dizziness, sore throat/cold, heart pounding/chest pain, tingling in limbs or face. The question was: "In the past month, how often have you had the following issues?" Each item was answered on a five-point scale: never (1), about once or twice (2), approximately once a week (3), more than once a week (4), every day (5). For analytical purposes, participants responses were dichotomised. Answers ranging from 1: "never" up to 3: "approximately once a week" were recoded as "Not many times per week" and answers ranging from 4: "More than once a week" up to 5: "every day" were recoded as "Many times a week".

2.1.2. Long lasting illnesses

For the occurrence of chronic illnesses, a 18-item measure was used introduced by the question: "Do you have a long-term illness or disability? Please tick all that apply to you." The illnesses are listed in table 3.

2.1.3. General health (GH)

The GH was assessed by composite variable created by summing up number of chronic illnesses. This variable was consequently divided into several categories based on the following approach: having

< 1 disease was classified as “no diseases”, 1 - 2 diseases was classified as “few diseases” 3 - 5 diseases as “several diseases” and more than 6 as “many diseases”.

2.1.4. Chronotype

Daily energy was measured by choosing between two possibilities – an early bird who wakes up early but is tired in the evening, or a night owl who has problem with waking up early but enjoys working in the evening.

2.2. Participants

2.2.1. Sample one

First sample ($n = 1800$, Age: $M = 46.41$, $SD = 17.4$, Females: 51.28%) consisted of participants from Czech nationally representative sample of the study on health, life experience, attitudes and lifestyle collected in 2016 [27]. In this dataset we did not find subjects responding incongruently to the control items i.e. feeling the God presence despite being Non-religious or atheist. Thus, no participant was excluded from a dataset.

2.2.2. Sample two

The second sample was collected in April 2020. It was a survey made in the Czech population during the first Covid 19-lockdown. From the original dataset ($n = 1263$), we excluded 120 participants who responded incongruently to 3 repeatedly asked questions and those, who were speeders i.e. time spend filling questionnaire was < 10 min. The three control questions included age (difference > 2 years), weight and height (difference > 2 kilogram and centimes). Hence, the number of participants was 1143. Based on the results of outliers screening procedure (see statistical analysis section), we also removed subjects, which responded to large number of questions in the same way ($n = 2$). Therefore, the final number of participants was 1141 (Age: $M = 49.2$, $SD = 16.73$, Females: 46.45%).

2.2.3. Sample three

The third sample ($n = 1662$) was collected during May 2021 (zde moc psal dopln další info). After data were collected, we excluded participants ($n = 166$) reporting incongruent answers and those who were classified as speeders. The criteria were the same as in the second sample. This resulted in 1496 (Age: $M = 50.67$, $SD = 15.79$, Females: 44.05%) participants. No participant with uniform responses was detected.

2.2.4. Sample four

A sample of Catholic order members in the Czech Republic and in the Slovak Republic was recruited to take part in a survey regarding various aspects of today's consecrated life. The respondents were recruited by contacting the major superiors of all male and female religious institutes in both countries. After six weeks, the information about the survey was sent directly into the local communities in order to increase the number of respondents. The research was done under the auspices of the Conference of Major Religious Superiors of the Czech and Slovak Republic. The superiors were asked to spread an online or a paper-and-pencil questionnaire among the members of their communities and to support its completing. Data was collected from March to May 2021. This sample initially consisted of 497 participants. In the first step, we excluded participants ($n = 4$) who were classified as speeders i.e. finished questionnaire typically lasting more than 30 minutes in < 10 minutes. After this exclusion, 493 participants remained. We also removed participants who filled questionnaire multiple times ($n = 63$) resulting in ($n = 430$) of subjects. This sample consisted of 180 Czech participants and 213 Slovak participants. Other than Czech and Slovak participants were excluded ($n = 37$) resulting in 393 subjects (Age: $M = 47.52$, $SD = 9.57$, Females: 78.88%). No uniform

pattern of responding was detected in this sample. The mean duration of being part of a religious community was 24.45.

2.3. Statistical analysis

As suggested by Shapiro-Wilk test and by histograms, normality assumption was broken in all samples. Thus, non - parametric methods were used. Homogeneity of variances was equal in all samples as indicated by the Breusch-Pagan test. As the null hypotheses of the MCAR test in all our surveys was not rejected, we deleted missing values listwise. Outliers were explored by the Median Absolute Deviation (MAD). Outliers identified by the MED were consequently screened and if there were signs of uniform pattern of responding i.e. answering the number of items in the same manner, than outlier were removed from the dataset.

To explore differences in health status among clerics and non - clerics, we compared in logistic regression models long lasting illnesses of clerics to chronic illnesses of participants from representative sample. In these models, long lasting illness were set as dependent variables. Grouping variable distinguishing clerics from non - clerics was a regressor. Covariates consists of gender, education and age. Ordinal logistic regression was used to compare clerincs and non - clerics in the GH. The same regressin type was applied to explore associations between chronotype and GH in clerics. In the orinal regression models, the following variables were controled: age, education, gender and length of a life in clerical order. Brant test indicated that proportional odds assumption holded for each of the orinal regression models. Variance inflation factor (VIF) used to assess multicollinearity in all regression models. The VIF values < 10 indicates acceptable association between variables [28]. The R [Version 4.1.0; R Core Team [29]] was utilized for all analysis.

3. Results

The table 1 depicts basic socio-demographic characteristics of the study samples.

Table 1. Socio-demographic table

Characteristic	Sample 1 N = 1,800	Sample 2 N = 1,141	Sample 3 N = 1,496	Sample 4 (CZ,SK) N = 393	Sample 4 (CZ) N = 180	Sample 4 (SK) N = 213
Gender						
Female	923 (51%)	530 (50%)	659 (44%)	310 (79%)	126 (70%)	184 (86%)
Male	877 (49%)	523 (50%)	835 (56%)	83 (21%)	54 (30%)	29 (14%)
Family_status						
Not in relationship	439 (24%)	267 (25%)	201 (13%)			
Married	929 (52%)	461 (44%)	714 (48%)			
Divorced	158 (8.8%)	201 (19%)	252 (17%)			
Widow/Widower	133 (7.4%)	73 (6.9%)	91 (6.1%)			
In relationship	141 (7.8%)	51 (4.8%)	236 (16%)			
Education						
Basic school	141 (7.8%)	90 (8.7%)	91 (6.1%)	1 (0.3%)	1 (0.6%)	0 (0%)
Vocational school or non - maturity high school	442 (25%)	400 (39%)	572 (38%)	12 (3.1%)	5 (2.8%)	7 (3.3%)
High school	854 (47%)	377 (36%)	451 (30%)	48 (12%)	24 (13%)	24 (11%)
Higher vocational school or University	363 (20%)	169 (16%)	380 (25%)	332 (84%)	150 (83%)	182 (85%)
Economical_status						
Without work	261 (14%)	149 (14%)	172 (13%)			
Pensioner	430 (24%)	325 (31%)	420 (32%)			
Working	1,109 (62%)	559 (54%)	707 (54%)			
Faith						
Yes, I am a member of church	170 (9.4%)		132 (9.4%)			
Yes, but I am not a member of a church	361 (20%)		331 (24%)			
No	1,004 (56%)		680 (48%)			
No, I am convinced atheist	265 (15%)		262 (19%)			

3.1. Chronic illness differences

The table 2 presents differences in chronic diseases between clerics and representative sample. It was revealed that there is a significant positive relationship between being a consecrated person and lower probability of chronic illnesses such as diabetes in crude effect. However, there was positive relationship between being cleric and obesity in crude and adjusted effect, pain in the small pelvis in both crude and adjusted effect. After Bonferroni correction, no further significant results were found. In the table 3, there can be found prevalence of chronic diseases among study samples.

Table 2. Depicts associations (in Odds ratios) between living in clerical life and chronic mental and physical diseases

	Pain in the small pelvis	Obesity	Diabetes	Arthritis	Thyroid disease
Crude effect	3.12*** (2.04, 4.72)	1.75*** (1.25, 2.41)	0.33*** (0.17, 0.57)	1.30 (0.84, 1.95)	1.70** (1.19, 2.40)
Adjusted effect	1.99* (1.16, 3.40)	1.85** (1.23, 2.78)	0.46* (0.23, 0.86)	1.62 (0.94, 2.74)	1.57* (1.01, 2.45)
Crude effect	Depression/Anxiety	Migraine	Pain of unclear origin	Cancer	
Adjusted effect	1.79** (1.22, 2.59)	1.00 (0.70, 1.41)	0.74 (0.40, 1.27)	1.34 (0.60, 2.68)	
Crude effect	Hypertension	Ischemic heart disease	Stroke	Back pain	
Adjusted effect	1.58 (0.98, 2.53)	0.74 (0.49, 1.12)	0.77 (0.38, 1.46)	1.69 (0.64, 4.21)	
Crude effect	Gastric or duodenal ulcers	Chronic lung disease	Skin diseases eczema	Allergy	
Adjusted effect	0.98 (0.73, 1.31)	0.77 (0.37, 1.45)	0.79 (0.19, 2.33)	1.17 (0.92, 1.48)	
Crude effect					
Adjusted effect	1.26 (0.89, 1.79)	1.72 (0.72, 3.85)	1.91 (0.36, 8.45)	1.27 (0.95, 1.70)	
Crude effect					
Adjusted effect	1.14 (0.58, 2.08)	1.56 (0.62, 3.47)	1.33 (0.90, 1.92)	1.28 (0.97, 1.67)	
Crude effect					
Adjusted effect	1.28 (0.57, 2.74)	1.51 (0.50, 4.29)	1.31 (0.82, 2.07)	1.15 (0.83, 1.60)	

Note: p < 0.05 *, p < 0.01 **, p < 0.001 ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results in the first row (except Thyroid disease) and variable obesity remained significant. Other relationships were non - significant.

Table 3. General health and chronic illnesses among study samples

Characteristic	Sample 1, N = 1,800	Sample 2, N = 1,141	Sample 3, N = 1,496	Sample 4, N = 393	Sample 4a, N = 180	Sample 4b, N = 213
ICHS	68 (3.8%)	47 (4.8%)	57 (3.9%)	10 (2.9%)	2 (1.3%)	8 (4.4%)
Hypertension	371 (21%)	243 (25%)	378 (26%)	69 (20%)	28 (18%)	41 (23%)
Stroke	20 (1.1%)	20 (2.0%)	22 (1.5%)	3 (0.9%)	2 (1.3%)	1 (0.5%)
Astma	166 (9.2%)	94 (9.6%)	128 (8.7%)	32 (9.4%)	15 (9.6%)	17 (9.3%)
Cancer	36 (2.0%)	28 (2.9%)	42 (2.8%)	9 (2.7%)	5 (3.2%)	4 (2.2%)
Diabetes	182 (10%)	117 (12%)	175 (12%)	12 (3.5%)	5 (3.2%)	7 (3.8%)
Obesity	183 (10%)	218 (22%)	238 (16%)	56 (17%)	23 (15%)	33 (18%)
Arthritis	121 (6.7%)	102 (10%)	121 (8.2%)	29 (8.6%)	11 (7.0%)	18 (9.9%)
Back pain	631 (35%)	348 (35%)	388 (26%)	131 (39%)	54 (34%)	77 (42%)
Gastric or duodenal ulcers	56 (3.1%)	31 (3.2%)	24 (1.6%)	12 (3.5%)	3 (1.9%)	9 (4.9%)
Chronic lung disease	24 (1.3%)	36 (3.7%)	45 (3.0%)	7 (2.1%)	1 (0.6%)	6 (3.3%)
Skin diseases eczema	156 (8.7%)	102 (10%)	93 (6.3%)	38 (11%)	15 (9.6%)	23 (13%)
Allergy	364 (20%)	178 (18%)	229 (16%)	83 (24%)	34 (22%)	49 (27%)
Migraine	223 (12%)	94 (9.6%)	63 (4.3%)	42 (12%)	15 (9.6%)	27 (15%)
Pain of unclear origin	99 (5.5%)	65 (6.6%)	45 (3.0%)	14 (4.1%)	8 (5.1%)	6 (3.3%)
Pain in the small pelvis	68 (3.8%)	35 (3.6%)	27 (1.8%)	37 (11%)	10 (6.4%)	27 (15%)
Depression/Anxiety	125 (6.9%)	102 (10%)	150 (10%)	40 (12%)	22 (14%)	18 (9.9%)
Thyroid disease	152 (8.4%)	110 (11%)	134 (9.1%)	46 (14%)	20 (13%)	26 (14%)
General_health	1.69 (1.54)	2.01 (1.93)	1.60 (1.68)	1.98 (1.71)	1.74 (1.57)	2.18 (1.81)

¹ ICHS = Ischemic heart disease, 4a = Cleric sample consisting of Czech participants, 4b = Cleric sample consisting of Slovak participants, In General health values refers to M(SD)

3.2. Health complains

Table 4 refers to associations between health complains in clerics as compared to representative sample. After Bonferroni correction, no result remained significant. However, there were some trends relatively close to significance threshold: for instance, clerics had higher odds of troubles falling into sleep in crude effect.

Table 4. Depicts associations (in Odds ratios) between living in clerical life and health complains in the last month

	Headache	Stomachache	Backache
Crude effect	0.87 (0.54, 1.36)	0.68 (0.33, 1.28)	0.99 (0.74, 1.31)
Adjusted effect	0.99 (0.53, 1.83)	0.61 (0.25, 1.43)	1.00 (0.67, 1.48)
	Intestinal problems	Trouble falling asleep	Dizziness
Crude effect	1.31 (0.78, 2.16)	0.65* (0.45, 0.92)	0.85 (0.41, 1.64)
Adjusted effect	1.37 (0.67, 2.81)	0.84 (0.52, 1.34)	1.41 (0.53, 3.60)

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval. After Bonferroni correction no results remained significant.

3.3. General health

Ordinal logistic regression indicated that in crude effect there was a trend showing that clerics being night owls had a higher chance of developing chronic illnesses as compared to early birds (OR 1.53; 95% CI (1.02, 2.30); $p=0.039$). However, in adjusted effect, this result was non significant (OR 1.45; 95% CI (0.96, 2.21); $p=0.078$).

In the next step, we compared clerics with representative sample in the General health. It was revealed that clerics had significantly higher odds of having lower GH in crude effect (OR 1.36; 95% CI (1.09, 1.69); $p=0.007$). Moreover, in the adjusted effect, the odds of having lower GH slightly increased (OR 1.39; 95% CI (1.07, 1.81); $p=0.013$).

3.4. Chronotype and health complains

In the table 5 there can be found associations between early birds and night owls in health complains in clerical sample. The following trends were found after Bonferroni correction: night owls had higher probability of suffering from problems of falling into sleep and backache as compared to early birds (in both crude and adjusted effect).

Table 5. Depicts associations (in Odds ratios) between early bird and night owns and health complains (cleric sample)

	Headache	Stomachache	Backache
Crude effect	0.76 (0.32, 1.70)	0.70 (0.18, 2.37)	1.73* (1.05, 2.86)
Adjusted effect	0.72 (0.31, 1.36)	0.70 (0.18, 2.42)	1.74* (1.04, 2.92)
	Intestinal problems	Trouble falling asleep	Dizziness
Crude effect	1.67 (0.71, 4.02)	2.55** (1.34, 4.99)	1.51 (0.45, 5.33)
Adjusted effect	1.61 (0.68, 3.84)	2.59** (1.35, 5.11)	1.29 (0.37, 4.42)

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results were non - significant.

3.5. Chronotype and chronic illnessess

Table 6 represents results of logistic regression comparing clerics being a “night owls” to clerics being “early birds”. Although after Bonferroni correction all results were non - significant, several relationships were close to newly set significance threshold: night owns as compared to early birds had higher odds of developing chronic arthritis (adjusted effect) and anxiety/depression (crude and adjusted effect).

Table 6. Depicts associations (in Odds ratios) between early bird and night owns clerics and chronical mental and physical deseases

	Gastric or duodenal ulcers	Chronic lung disease	Skin diseases eczema	Allergy	Migraine
Crude effect	2.23 (0.66, 8.64)	1.67 (0.36, 8.60)	1.27 (0.65, 2.52)	0.93 (0.56, 1.54)	1.15 (0.60, 2.20)
Adjusted effect	2.03 (0.57, 7.26)	1.60 (0.35, 7.35)	1.28 (0.64, 2.55)	0.94 (0.57, 1.57)	1.04 (0.53, 2.01)
	Depression/Anxiety	Ischemic heart disease	Obesity	Back pain	
Crude effect	2.02* (1.04, 4.03)	0.82 (0.21, 2.93)	1.41 (0.79, 2.52)	1.02 (0.66, 1.59)	
Adjusted effect	2.00* (1.03, 4.01)	0.54 (0.11, 2.30)	1.47 (0.81, 2.67)	1.01 (0.64, 1.60)	
	Hypertension	Diabetes	Arthritis	Astma	
Crude effect	1.26 (0.74, 2.15)	0.88 (0.26, 2.82)	2.55* (1.17, 5.89)	1.93 (0.93, 4.14)	
Adjusted effect	1.25 (0.71, 2.18)	0.94 (0.28, 3.11)	3.49** (1.43, 9.31)	1.89 (0.90, 4.08)	
	Pain of unclear origin	Pain in the small pelvis	Cancer	Thyroid disease	
Crude effect	0.32 (0.07, 1.06)	0.64 (0.31, 1.29)	0.35 (0.05, 1.46)	1.16 (0.62, 2.17)	
Adjusted effect	0.36 (0.08, 1.21)	0.63 (0.29, 1.30)	0.25 (0.04, 1.42)	1.03 (0.54, 1.95)	

Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***, Adjusted effect was calculated using the following variables as a covariates: Age, Gender and Education. Values in brackets indicates 95% confidence interval. After Bonferroni correction all results were non - significant. Variable stroke was excluded from analysis, because model containing it did not converge.

3.6. Subsection Heading Here

3.6.1. Subsubsection Heading Here

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4. Discussion

5. Conclusion

6. Patents

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Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used “X.X. and Y.Y. conceive and designed the experiments; X.X. performed the experiments; X.X. and Y.Y. analyzed the data; W.W. contributed reagents/materials/analysis tools; Y.Y. wrote the paper.” Authorship must be limited to those who have contributed substantially to the work reported.

Conflicts of Interest: Declare conflicts of interest or state ‘The authors declare no conflict of interest.’ Authors must identify and declare any personal circumstances or interest that may be perceived as inappropriately influencing the representation or interpretation of reported research results. Any role of the funding sponsors in the design of the study; in the collection, analyses or interpretation of data in the writing of the manuscript, or in the decision to publish the results must be declared in this section. If there is no role, please state ‘The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, an in the decision to publish the results’.

Abbreviations

The following abbreviations are used in this manuscript:

MDPI	Multidisciplinary Digital Publishing Institute
DOAJ	Directory of open access journals
TLA	Three letter acronym
LD	linear dichroism
MSE	Mean Square Error

Appendix A

Appendix A.1

The appendix is an optional section that can contain details and data supplemental to the main text. For example, explanations of experimental details that would disrupt the flow of the main text, but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results not central to the paper can be added as an appendix.

Appendix B

All appendix sections must be cited in the main text. In the appendixes, Figures, Tables, etc. should be labeled starting with ‘A’, e.g., Figure A1, Figure A2, etc.

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Sample Availability: Data used for the analysis in this study as well as the code are publically available nad can be found on the Open Scienfe Network webside (<https://osf.io/ad6b3/>).



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